# Position Details

## Research Scientist/Engineer- CSOF5 & CSOF6

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| The following information is for applicants | |
| Advertised Job Title | Data Scientist: Machine Learning in Health |
| Job Reference | 93173 |
| Tenure | Full-time / Specified term of up to 2 years |
| Salary Range | CSOF5: AU$105,806 – AU$114,500 per annum plus up to 15.4% superannuation  CSOF6: AU$121,455 – AU$142,321 per annum plus up to 15.4% superannuation  *Applications are invited across two capability levels and the successful candidate will be appointed at the level that is commensurate with their skills and experience.* |
| Location(s) | Brisbane, QLD / Sydney, NSW / Melbourne, VIC |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | Australian/New Zealand Citizens or Australian Permanent Residents only |
| Position reports to the | Team Leader, Health Intelligence Team |
| Client Focus – Internal | 60% |
| Client Focus – External | 40% |
| Number of Direct Reports | 0 |
| Enquire about this job | Dr Sankalp Khanna  Email: [Sankalp.Khanna@csiro.au](mailto:Sankalp.Khanna@csiro.au)  Phone: 07 3253 3629 |
| How to apply | Apply online at <https://jobs.csiro.au/>  Internal applicants please apply via **Jobs Central**  If you experience difficulties when applying, please email [careers.online@csiro.au](mailto:careers.online@csiro.au) or call 1300 984 220. |

**Acknowledgement of Country**

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the areas that we live and work on across Australia. We acknowledge their continuing connection to their culture and pay our respects to their Elders past and present. View our [vision towards reconciliation](https://www.csiro.au/en/about/Indigenous-engagement/Reconciliation-Action-Plan).

**Child Safety**

CSIRO is committed to the safety and wellbeing of all children and young people involved in our activities and programs. View our [Child Safe Policy](https://www.csiro.au/en/about/policies/child-safe-policy).

### Role Overview

The role of Research Scientist/Engineer staff in CSIRO is to conduct innovative research leading to scientific achievements that are aligned with CSIRO’s strategies. The Research Scientist/Engineer may be engaged in scientific activity ranging from fundamental research to the investigation of specific industry or community problems. The Research Scientist/Engineer will have the opportunity to build and maintain professional networks, play a lead role in securing project funds, provide scientific leadership and pursue new ideas and approaches that create new concepts. You may be involved in leading research projects or undertaking work that has impact on the development of scientific or technical knowledge.

The role of the Data Scientist: Machine Learning (ML) in Health is to work in collaboration with other scientists, clinicians and other health professionals, and contribute to multiple projects in the area of Health System Analytics particularly focussed on the development and use of novel and interpretable ML algorithms and workflows for applications in healthcare such as improving productivity and efficiency, informing treatment effectiveness, risk stratification and clinical decision support.

The scientific problems that arise in Health Systems Analytics are varied and challenging, requiring strong mathematical and statistical grounding. In addition, the successful candidate will be enthusiastic about making a hands-on contribution to solving research challenges and will have established expertise in the development and application of ML algorithms for solving real world problems.

The Health System Analytics group is part of the Australian eHealth Research Centre (AEHRC), CSIRO’s Digital Health Research program and conducts high impact research in the domains of Health Intelligence, Digital Solutions for AMR and Health Implementation Science. The position provides an exciting career path for an applicant who is keen to be part of a growing team contributing towards significant research goals and delivering impact on national and international health policy aligned with the AEHRC Health Systems Analytics group’s strategies. A key component of this role includes working with team members and domain experts to develop, validate, improve and generalize predictive and prescriptive analytics models for informing operational and clinical decision making.

### Duties and Key Result Areas at CSOF5

* Development and application of ML algorithms to support clinical decisions, improved productivity, safety and quality, and evidence-based healthcare.
* Develop workflows for exploring, pre-processing and manipulating large datasets through ML applications and programming interfaces.
* Develop and deploy methodology and/or adapt existing and interpretable machine learning methods in novel and creative ways to meet the group’s research objectives.
* Utilise various analytic and statistical methodologies to evaluate and interpret data.
* Incorporate innovative approaches to scientific investigations by adapting and/or developing original concepts and ideas for new, existing and further research.
* Use CSIRO High Performance Computing and cloud-based resources for managing and processing large datasets and machine learning pipelines.
* Carry out research investigations, requiring originality, creativity and innovation; record study results and interpret the findings in terms of their scientific significance.
* Communicate effectively and respectfully in the interests of good business practice, build appropriate collaborations and enhance CSIRO’s reputation by applying good scientific practice.
* Produce high quality scientific papers suitable for publication in quality journals and for presentation at national and international conferences.
* Work effectively as an integral member of a multi-disciplinary, geographically dispersed research team, to undertake independent scientific investigations and carry out/delegate associated tasks under broad guidance from more senior Research Scientists/Engineers.
* Work collaboratively and honestly with internal and external colleagues, clients and partners to develop and progress challenging but realistic research plans for a range of research projects.
* Support and lead research projects and related activity including the negotiation of resource requirements.
* Generate and protect intellectual property and support the commercialisation of existing IP to create scalable impact and revenue streams.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals.
* Other duties as directed.

### Additional duties and Key Result Areas at CSOF6

* Develop challenging but realistic research plans and negotiate resource requirements with research managers and clients.
* Lead small to medium-scale research projects and be responsible for elements of larger projects within and/or across Business Units.
* Support and lead the planning, preparation and delivery of research proposals, grant applications and tenders to government and industry.
* Anticipate industry and community needs and market direction through client liaison and networking and contribute to development of CSIRO’s digital strategy.

## **Selection Criteria across both capability levels**

**Essential**

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A doctorate and/or equivalent research experience in a relevant discipline area, such as Computer/Data Science, Applied Mathematics, Statistics, Engineering or Operations Research.
2. Proficiency with programming languages such as Python, and ML /AI libraries such as TensorFlow, Scikit-Learn, Keras, PyTorch, etc.
3. Demonstrated competency in managing, analysing, and preparing large datasets.
4. Experience with feature engineering and end-to-end pipeline development and application for machine learning.
5. Demonstrated ability in solving real world scientific problems, including the ability to programme new analyses, clean and structure data, and develop and validate appropriate models.
6. Demonstrated ability to undertake original, creative and innovative research in ML/AI, by generating and pursuing novel ideas and solutions to scientific research problems.
7. Knowledge of statistical learning or inference, including machine learning and artificial intelligence techniques for pattern recognition, prediction and optimization.
8. **High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including the presentation of research outcomes at national and international conferences.**
9. **The ability to work effectively as a member of a multi-disciplinary, geographically dispersed research team, and carry out independent individual research, to achieve organisational goals.**
10. A significant record of science innovation and creativity plus the ability to apply well developed research skills to scientific investigations.

**Desirable**

1. Experience in managing, curating, and analysing large datasets employing cloud or high-performance computing.
2. Good understanding of version control systems such as GitHub, BitBucket, etc.
3. Previous experience working in the health domain, especially with clinical data.
4. Experience in developing successfully funded research proposals.

**As Australia’s Innovation Catalyst, CSIRO has strategic actions underpinned by behaviours aligned to**:

* Excellent science
* Inclusion, trust & respect
* Health, safety & environment
* Delivery on commitments.

***In your application and at the interview you will need to demonstrate alignment with these behaviours*.**

## **Required Competencies at CSOF5**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others’ reactions.
* **Resource Management/Leadership:** Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate responses by adapting/creating and testing alternative solutions.
* **Independence:** Plans, sets and works to meet challenging standards and goals for self and/or others. Recognises where endeavours will make the most impact or difference, decides on desired outcome and sets realistic goals to reach this target.
* **Adaptability:**Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of change.

**Required Competencies at CSOF6**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Identifies critical stakeholders and influences them via an influential third party, for example through an established network, to gain support for sometimes contentious proposals/ideas.
* **Resource Management/Leadership:** Sets up and maintains effective and efficient work teams and manages performance and resources, to achieve objectives. Chooses appropriate management strategies and communication styles to maintain high levels of motivation and productivity. Gives feedback for development purposes and provides support and direction for improvement.
* **Judgement and Problem Solving:** Anticipates and manages problems in ambiguous situations. Develops and selects an appropriate course of action and provides for contingencies. Evaluates, interprets and integrates complex bodies of information and draws logical conclusions, synthesises proposals and defends options with reasoned arguments.
* **Independence:** Assesses the risk and opportunity of identified strategies, options and actions. Overcomes problems and setbacks in achieving goals. Invariably includes consideration of value-added future impact on bottom line when determining the optimal and efficient use of resources.
* **Adaptability:**Demonstrates flexibility in thinking and adapts to, and manages, the increasing rate of organisational change by adjusting strategies, goal and priorities.

Special Requirements

Appointment to this role may be subject to conditions including the provision of a national police check as well as other security/medical/character clearance requirements.

* The successful candidate will be asked to obtain and provide evidence of a National Police Check or equivalent. Please note that people with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) and [Health and Biosecurity Business Unit - CSIRO](https://www.csiro.au/en/about/people/business-units/health-and-biosecurity) for more information.

CSIRO is a values-based organisation.  In your application and at interview you will need to demonstrate behaviours aligned to our values of:

* People First
* Further Together
* Making it Real
* Trusted